A FURTHER INVESTIGATION OF BREAST-FEEDING

A STUDY OF ONE THOUSAND MOTHERS

BY

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The following investigations were undertaken in order to find the cause of the variation in the breast-feeding rate which, in a previous paper (Robinson, 1939), was shown to occur from year to year.

TABLE 1

PERCENTAGE OF INFANTS BREAST-FED FOR ONE, THREE, SIX AND NINE MONTHS, SHOWN IN RELATION TO MONTH IN WHICH BORN

DURATION OF BREAST-FEEDING IN MONTHS	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
One	43	32	39	49	40	37	49	41	44	39	45	41
Three	24	24	18	25	19	19	17	22	29	19	25	31
Six	3	0	14	6	12	14	8	21	6	6	5	11
Nine	30	44	29	20	29	30	26	16	21	36	25	17
Numbers used ..	46	41	62	55	58	57	47	56	48	31	40	46

The breast-feeding rate for 1937 was re-assessed monthly according to the date on which the babies were born. Table 1 shows that the swing is still present and has no relation to the seasons of the year. The percentage of babies still on the breast at the ninth month is highest (44 per cent.) for those born in February, and lowest (16 per cent.) for those born in August. April and July give the highest (49 per cent.) and February the lowest (32 per cent.) percentage weaned during the first month. The duration of breast-feeding was calculated for 3,515 babies in accordance with the position of the child in the family, judged by the parity of the mother and not by the number of living children in the family at the time when the child was first seen. Table 2 shows the month of weaning of 3,515 babies classified according to their position in the family judged by the parity of the mother, and shows percentages weaned by the end of the first, third and seventh months and those still left on the breast during the eighth month. Families of nine or more children were too few to analyse. It appears from table 2 that the position of the child in

TABLE 2

BABY	PERCENTAGE DEAD	PERCENTAGE WEANED				TOTAL	DISCARDED	USED
		1 MONTH	2-3 MONTHS	4-7 MONTHS	8 MONTHS			
1st	7	20	15	8	57	1,050	91	959
2nd	11	19	10	8	63	827	87	740
3rd	11	19	12	7	63	640	71	569
4th	12	20	10	6	64	482	59	423
5th	13	23	12	6	59	369	48	321
6th	16	20	13	3	64	265	42	223
7th	17	20	14	5	61	200	34	166
8th	20	19	9	6	57	130	26	114

the family has no effect on the duration of breast-feeding. Those discarded include still-births, defaulters, and those who died before the end of lactation. The second column gives the percentage of still-births plus babies dying while still on the breast. The death-rate increases with the parity of the mother. Yerushalmy (1940) noticed that still-births increased as the number of pregnancies increased. On further investigation, I found that thirty-one deaths occurred over the age of three months, but they did not seem to increase with the parity of the mother, whereas the 171 deaths which occurred between birth and three months increased with the parity of the mother, so that the death-rate against the eighth born is twice that of the first born. It would, therefore, appear that whatever governs still-births and miscarriages also affects the viability of babies under three months of age even though they are breast-fed. Seibert (1940) suggests the cause of neonatal deaths to be the biological factor of constitution.

TABLE 3

MONTH OF WEANING OF THE ONLY CHILDREN OF 300 MOTHERS, ASSESSED ACCORDING TO THE AGE OF THE MOTHER. (PERCENTAGES WEANED BY THE END OF THE FIRST, THIRD, SIXTH AND NINTH MONTHS)

AGE OF MOTHER	PERCENTAGE OF INFANTS WEANED				TOTAL
	1 MONTH	3 MONTHS	6 MONTHS	9 MONTHS	
Under 20 years	28	13	10	49	39
20-25 years ..	28	20	6	46	149
25-30	21	18	11	50	89
30-35	42	5	11	42	19
35-40	0	0	25	75	4

The breast-feeding of 300 babies of mothers attending the antenatal clinic for their second pregnancy was examined in order to see if the age of the mother affected the feeding of her first child. Table 3 shows a negative result. Almost the same percentage of mothers of between thirty and thirty-five years of age

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feed their babies for nine months as do the younger mothers, although they are inclined to wean oftener in the first month. The thirty-five to forty year old group is small, but suggests that age has no adverse effect on lactation.

The histories of all the lactations of 1,369 cases were collected (table 4). 369 were discarded because they had only one child. The remaining 1,000 were divided into four types as follows:

Type I in which all the children were fully breast-fed.

Type II in which all the children were weaned early.

Type III in which the older children were weaned early and many of the younger ones were fully breast-fed.

Type IV in which the older children were fully breast-fed and many of the younger ones were weaned early.

TABLE 4

THE FIGURES IN BRACKETS INDICATE THE PERCENTAGE TYPE ACCORDING TO SIZE OF FAMILY

TYPE OF MOTHER	SIZE OF FAMILY IN EACH TYPE														PERCENTAGE IN EACH TYPE	TOTAL
	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
I	113 (43)	82 (40)	56 (41)	55 (40)	39 (43)	25 (38)	23 (45)	15 (50)	2 (18)	0	3 (60)	—	—	—	41.3	413
II	87 (33)	56 (28)	31 (22)	24 (18)	15 (16)	6 (9)	9 (18)	4 (13)	3 (27)	0	2 (40)	0	1 (100)	—	23.8	238
III	33 (13)	26 (13)	25 (18)	14 (10)	9 (10)	9 (14)	9 (18)	2 (7)	1 (9)	—	—	—	—	—	12.8	128
IV	30 (11)	38 (19)	26 (19)	44 (32)	28 (31)	26 (39)	10 (19)	9 (30)	5 (46)	2 (100)	0	2 (100)	—	1 (100)	22.1	221
Total Families	263	202	138	137	91	66	51	30	11	2	5	2	1	1	—	1,000

Table 4 shows the number of families, their size and the type to which they belong. Forty-one per cent. of mothers feed all their babies to nine months or over; about 24 per cent. wean all their babies during the first few months, about 13 per cent. wean their elder children during the first few months, but usually succeed in feeding most of the younger ones to nine months; and 22 per cent. feed their elder children to nine months, but usually wean the younger ones during the first few months. Type I mother is found in 43 per cent. of families of two children and this percentage only varies between 43 per cent. and 38 per cent. up to families of seven children. Type II mother is found in 33 per cent. of families of two children and this percentage gradually declines to 9 per cent. in families of seven children, i.e. as the family grows larger the type II mother changes to type III. Type III mother is found in 13 per cent. of families of two children and as the size of the family increases the percentage varies between 10 per cent. and 18 per cent. Type IV mothers

are found in 11 per cent. of families of two children and this percentage increases to 39 per cent. in families of seven children. This may have given rise to the belief that older women do not feed so long as the younger ones. I have shown above that this is not the case. The total number of families of eight children and over are so small that the percentages may not be accurate. In each of the types II, III and IV 52 per cent. of the weaning occurred before the end of the first month. and 80 per cent. before the end of the third month.

TABLE 5

THE PERCENTAGE OF THE FOUR TYPES OF MOTHER OCCURRING IN THE YEARS 1936, 1937 AND 1938, TOGETHER WITH THE WEANING-RATE OF EACH YEAR GIVEN IN PERCENTAGES OF THOSE WEANED AT THE END OF THE FIRST, THIRD, SIXTH AND NINTH MONTHS

YEAR	TYPE OF MOTHER (PER CENT.)				TOTAL	PERCENTAGE OF INFANTS WEANED			
	I	II	III	IV		1 MONTH	3 MONTHS	6 MONTHS	9 MONTHS
1936	42	21	12	25	157	25	14	7	54
1937	46	16	12	26	160	22	15	6	57
1938	41	16	10	33	103	18	23	6	53

Table 5 shows that the swing in the breast-feeding rate during 1936, 1937 and 1938 is caused by the variation in percentages of pregnancies occurring in the four types of mother in each year, e.g. 1937 contained the highest number of type I mothers and also the highest number of babies on the breast at nine months, whereas 1938 contained the lowest number of type I mothers and the lowest number on the breast at nine months. To prove that breast-feeding is really declining, it would be necessary to show that, over a number of years, a steady decrease had occurred in the percentage of type I mother together with an increase in that of the other three types. Table 5 had to be compiled from the antenatal cards on which I had written the breast-feeding histories. The result as a whole is higher than that obtained in my first paper (Robinson, 1939) which may be accounted for by the fact that mothers usually give the time when breast-feeding ceases altogether and not, as I did, the time when the first bottle was given. This factor may also give the actual observer of breast-feeding the idea that the last generation of mothers (from whom histories only are available) were better feeders than those of this generation.

Table 6 deals with the physique of the mother. It shows that lactation is affected, not by the gross size of the breasts, but by the size and character of the nipple. The actual breast tissue is impossible to assess as it is surrounded by so much fat. In the flat-chested mothers one can feel a firm, circular, movable plaque attached to the nipple, which increases during the first twenty weeks of pregnancy. The presence of secretion (either watery or like thick cream) was demonstrated in both type I and type II mothers as early as the twenty-sixth week of pregnancy. It occurred antenatally in 36 per cent. of type I mothers, and in 27 per cent. of type II mothers. Its presence, therefore, is no

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criterion that the subsequent baby will be fully breast-fed. Lactorrhoea also occurs in both type I and type II mothers. Mastitis tends to increase in type II and type IV mothers. It is difficult to say whether this is due to advice to refrain from feeding or due to the inability to feed. Breast abscesses cause an increase in type II and type IV mothers as well as a considerable reduction in type I mothers.

TABLE 6

THE PERCENTAGE OF MOTHERS IN EACH OF THE FOUR TYPES GROUPED ACCORDING TO THEIR PHYSICAL CHARACTERISTICS, COMPARED WITH THE PERCENTAGES OF THESE GROUPS NOTED IN TABLE 4

TYPE 8	TABLE 4	NIPPLES							BREASTS							GENERAL CON- DITION		
		FLAT	SMALL	AVERAGE	LARGE	LOOSE	TIED	CRACKED	FLAT	SMALL	AVERAGE	LARGE	ABSCSS	MASTITIS	ENLARGED THYROID	RHEUMATIC HEART	MASCULINITY *	OBESITY
I	41	18	28	48	46	45	16	28	43	41	48	41	16	28	30	39	31	56
II	24	64	56	30	20	28	56	43	21	27	23	23	40	36	30	32	47	24
III	13	0	7	10	10	11	12	14	11	14	12	14	9	0	10	10	14	0
IV	22	18	9	12	24	16	16	15	25	18	17	22	35	36	30	19	8	20
Total	1,000	17	113	535	105	133	32	58	103	305	267	148	43	14	10	31	51	25

* The term masculinity is applied to those women who had varying degrees of the male distribution of hair.

Mothers with flat or small nipples are not as good feeders as those with average or large nipples. A baby can be successfully fed with a flat nipple provided it is 'loose' and not 'tied,' i.e. when the baby chews with its gums on the outer edge of the areola the nipple is not retracted. If the first finger and thumb are used in place of the baby's upper and lower jaws, a thick cord is felt pulling on a 'tied' nipple; the nipple is pulled in and a bead of milk appears. Whereas with the 'loose' nipple the finger and thumb come easily together and a squirt of milk comes out, just as if the bulb of an enema syringe had been squeezed. The size and the distance covered by the jet depends on the force and rapidity used in this pincer movement, as well as the fact that it is used on the outer margin of the areola. Babies with powerful masseter muscles are called strong suckers by their mothers. There is a high incidence of 'tied' nipples among mothers suffering from cracked nipples and breast abscesses. It can be seen in table 6 that 'tied' nipples reduce the percentage of type I mothers, and increase that of type II mothers to almost as great an extent as do flat nipples. Cracked nipples also reduce the length of lactation, but not to quite the same degree.

Among the ten cases of enlarged thyroid glands, two were cases of exophthalmic goitre, and they belonged to type IV. Possibly their older

children were born before their thyroid gland was affected. One mother had had partial removal of her thyroid gland at puberty, and fed both her babies. The others were just simple enlargements. Mothers with rheumatic endocarditis are usually good feeders if not forbidden to feed by their medical attendant. The masculine woman belongs mostly to type II, whereas the very obese woman (12–14 stone) is found mostly in type I.

TABLE 7

THE PERCENTAGE OF MOTHERS IN EACH OF THE FOUR TYPES GROUPED ACCORDING TO THEIR ANTENATAL HISTORY

TYPE OF MOTHER	TABLE 4	MORNING SICKNESS				HEART-BURN		VARICOSE VEINS		PRE-ECLAMPSIA	PYELITIS	APPARENT CALCIUM DEFICIENCY †
		AMESIS	SLIGHT *	AVERAGE	HYPEREMESIS	MILD	SEVERE	SLIGHT	SEVERE			
I	41	57	60	40	13	45	39	49	38	47	32	46
II	24	29	28	34	71	29	44	29	38	30	38	32
III	13	5	7	11	3	11	6	5	11	4	9	8
IV	22	9	5	15	13	15	11	17	13	19	21	14
Total	1,000	242	72	484	63	342	18	111	129	70	68	305

* This includes nausea without vomiting.

† This includes antenatal symptoms such as cramps and generalized pruritus, which are relieved by calcium.

Table 7 deals with the antenatal histories of the four types of mother. Morning sickness and pyelitis seem to be the only pre-natal complaints which have an adverse effect on breast-feeding. The greater the severity of the morning sickness, the shorter the lactation and vice versa. Masculinity is associated with morning sickness, since only 4 per cent. had amesis and 28 per cent. of 861 mothers had hyperemesis. This may be the reason why so many masculine women belong to type II. The numbers of cases of excessive heartburn are too small to be considered. In the pre-eclamptic group six mothers developed eclampsia; three belonged to type I and three to type II. Severe varicose veins increase slightly the percentage of type II mothers at the expense of type I.

An enquiry into the time when the mothers' periods recommenced after labour showed that 24 per cent. of mothers of both type I and type II had their first period when their babies were six weeks old; also that 59 per cent. of type I mothers and 68 per cent. of type II mothers did not have any periods until after weaning had taken place. It seems, therefore, that the return of menstruation has no effect on lactation, and can occur regularly during the nine months of breast-feeding.

Summary

An investigation was carried out in order to find the cause of the swing in the breast-feeding rate. Mothers were classified into four types. The parity, age, physical characteristics and antenatal history of the mothers were examined in relation to breast-feeding.

Conclusions

- (1) Four types of mother are described.
- (2) The swing in the breast-feeding rate depends on the variations in the percentage of these types.
- (3) Breast-feeding is not affected by the following: the seasons of the year, the parity of the mother, the age of the mother, the size of the breasts, the antenatal presence of secretion in the breasts, the return of menstruation, rheumatic endocarditis, simple enlargement of the thyroid gland, pre-eclampsia, and antenatal symptoms relieved by calcium.
- (4) Breast-feeding is affected by the following: the size and character of the nipple, masculinity, obesity, morning sickness, pyelitis, severe varicose veins, breast abscesses and cracked nipples.
- (5) Fifty-two per cent. of early weaning occurs in all types before the end of the first month.

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